Burners

Purpose:

To alert customers to known mechanical problems with burners and to provide recommendations for corrective action.

Problem:

Burners operate in a very hostile environment and, as a result, may experience operating problems. The table below lists common problems that may occur with burners, the probable cause for the problems and the recommended solution to overcome the problem. The descriptions and figures are specific to dual register burners, but are applicable to circular and cell burners in certain instances.

Symptom	Probable Cause	Suggested Action
Register doors bind on Dual Register Burners.	Linkage is improperly adjusted.	Adjust register door linkage as follows: Adjust length of linkage (Figure 1) so that distance, center to center, between pins is equal to distance, center to center, of door shafts on linkage (distance A is equal to distance B). Distance between door shafts may vary with different blades.
	Front plate and/or back plate warping.	1. Trim register blade to clear front and/or back plate (Figure 2). Install thermocouples to set minimum cooling air. 2. Upgrade registers with H.D. register assembly for better reliability (Figure 3). An engineering review is recommended when a major modification is considered.

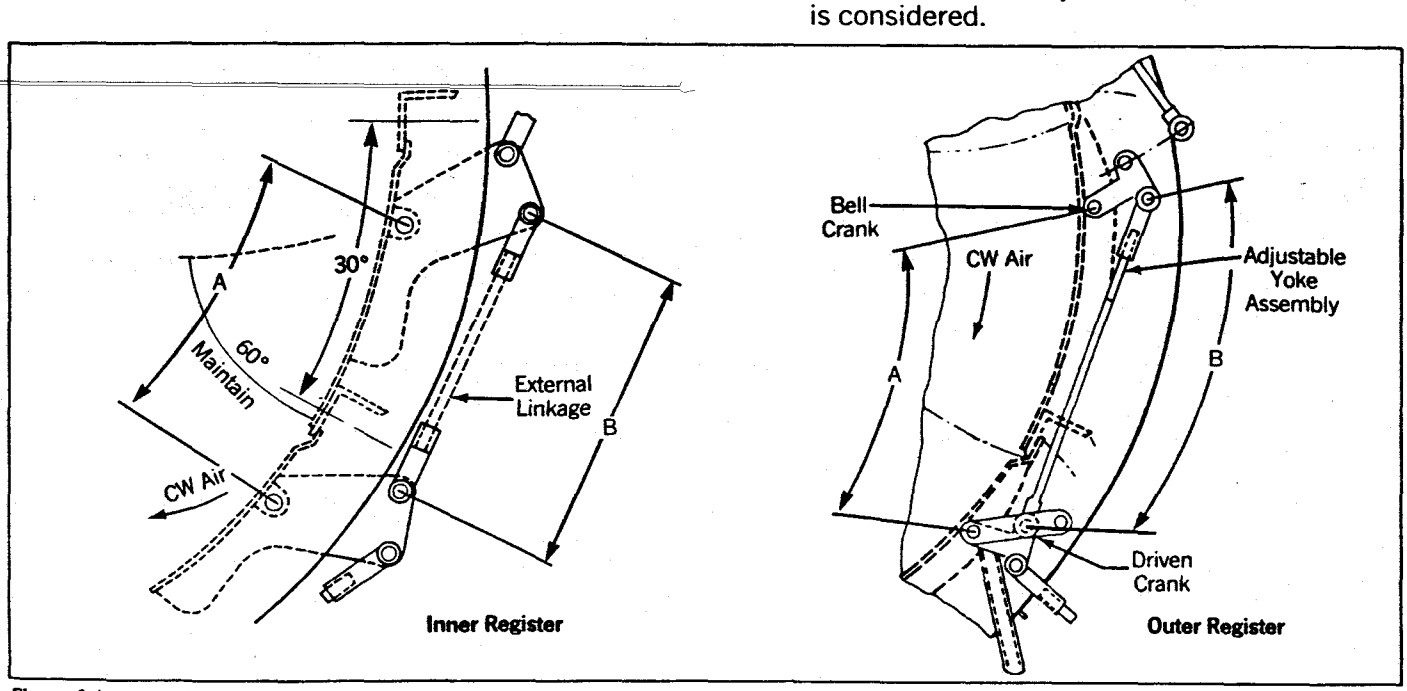

Figure 1 *Inner and outer registers.*

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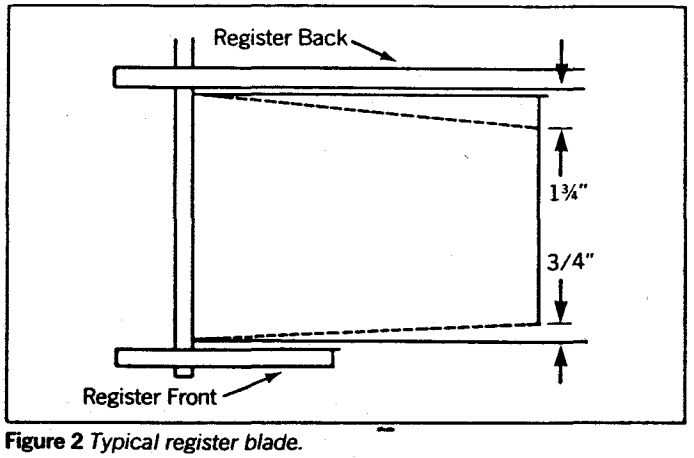

Figure 2 *Typical register blade.*

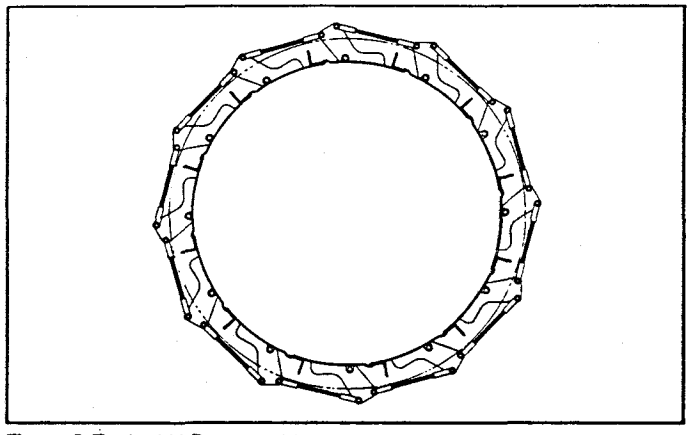

Figure 3 *Typical H.D. assembly.*

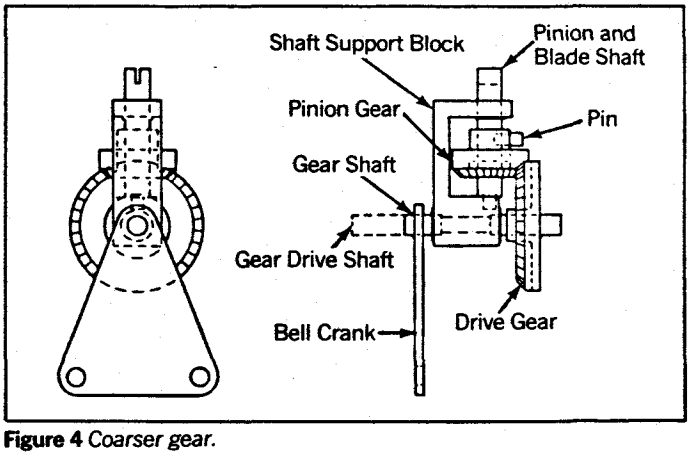

Figure 4 *Coarser gear.*

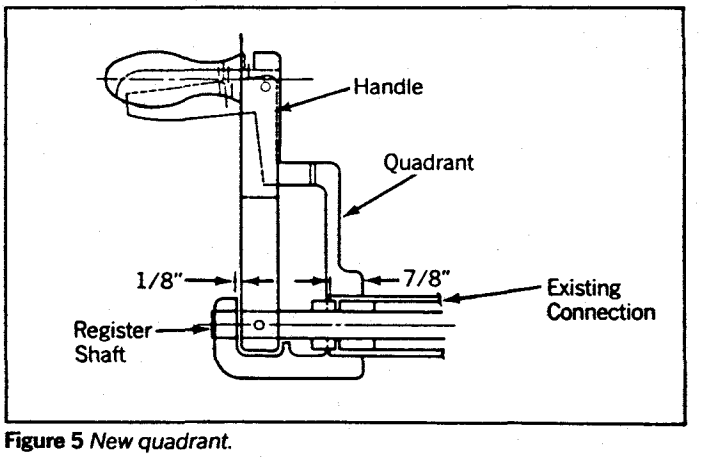

Figure 5 *New quadrant.*

Symptom	Probable Cause	Suggested Action
Spin vanes bind on Dual Register Burners	Ash is adhering to gear teeth.	1. Replace existing spin vane drive gears with new (coarse) design (Figure 4). This will minimize fly ash problem. 2. Do *not* use oil base lubricants on gears or register linkages. A graphite base lubricant is recommended, and only when necessary. **Note** The setting of spin vanes is critical. A special tool is required.
Register position reference lost.	Quadrant unscrews from threaded connection on windbox.	Replace aluminum quadrant with cast steel quadrant (Figure 5). The cast steel quadrant slips over existing threads. Set register position reference and weld new quadrant to threaded wind box connection after matching actual register position with quadrant position.

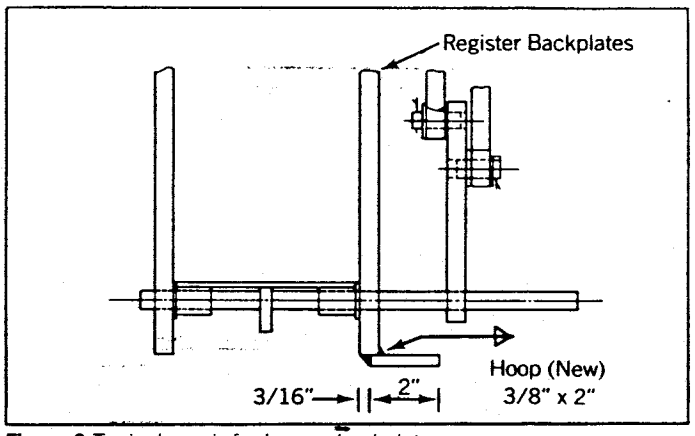

Figure 6 *Typical repair for burner backplates.*

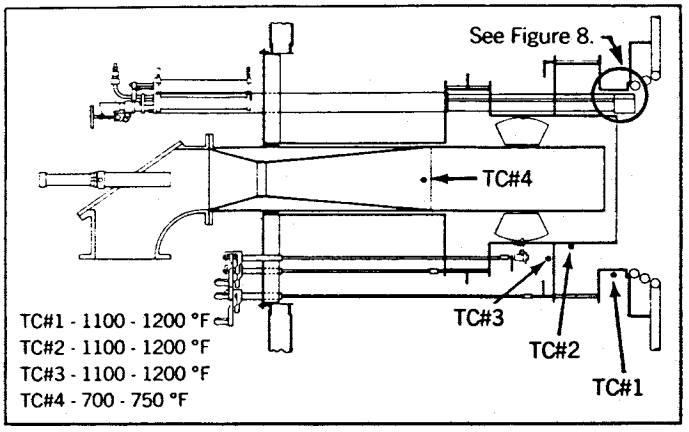

Figure 7 *Suggested thermocouples for monitoring cooling air on dual register burners.*

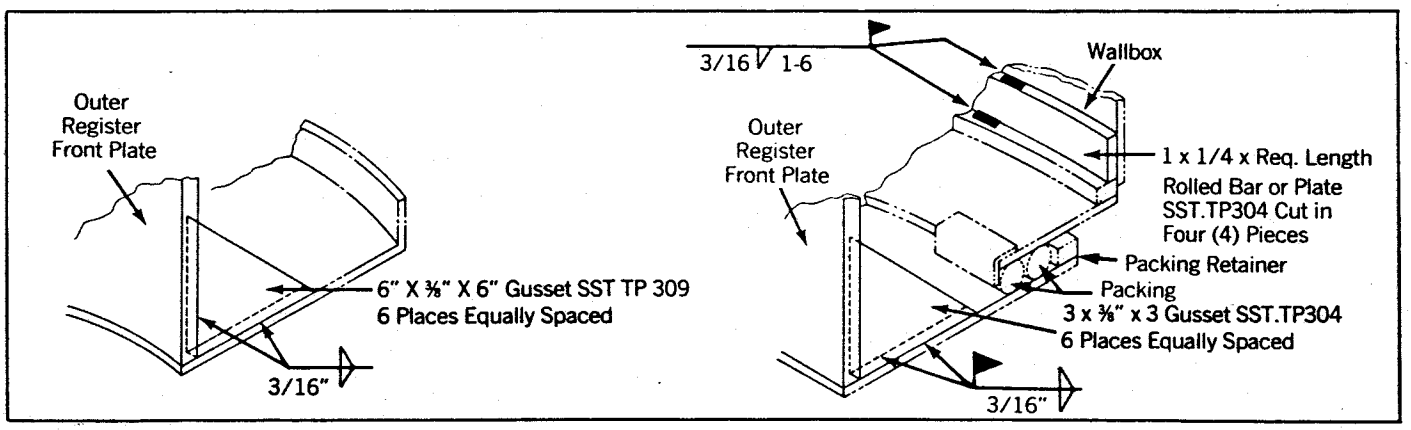

Figure 8 *Slip seal plate modification (see Figure 7 for Location).*

Symptom	Probable Cause	Suggested Action
Burner backplate overheats, distorts and warps.	When burners are out of service, cooling air may be insufficient to cool burner backplates	1. Straighten backplate and add a hoop to reinforce it (Figure 6). 2. Install permanent thermocouples on register and burner to determine if cooling air to out of service burner is adequate (Figure 7). Monitor thermocouples and adjust cooling air by using compartment dampers to keep burner cool.
Air bypasses burner register assembly.	Register assembly warps. Front wall seal plate connection fills with debris and does not allow proper expansion movement.	Trim seal plate and add several rows of packing and a packing retained plate (Figure 8). Fiberfrax 2300 is recommended for packing. It retains its tensile strength while hot.
Dresser couplings come apart and/or burner assembly is cantilevered.	Coal piping was not properly supported, raising burner off its support rails.	Check the coal piping supports and loadings. Make sure supports are proper and loadings are correct. Reassemble Dresser couplings. Make sure burner assembly is not cantilevered.

Support

Please contact Babcock & Wilcox Field Service Engineering if you need additional information concerning details described in this PSB or if you have questions relative to the functional performance of the boiler (such as NO_X control, secondary air flow distribution and control, and reducing unburned carbon or other related combustion issues).

WARNING: ASBESTOS HAZARD

Steam/air atomizer gun packing may contain asbestos fibers which may be harmful if released into the air. On lighter assemblies prior to 1983 asbestos may have been used as packing material. There is a high risk of asbestos fiber release if packing is touched or disturbed.

Breathing asbestos dust can cause cancer and other serious diseases.

If packing must be replaced, replace only with an asbestos substitute which has been used exclusively since 1983. Always wear disposable gloves and a respirator which is approved for asbestos use. Follow EPA and OSHA asbestos removal procedures when removing packing.

If exposed to asbestos dust, follow the directions of your health safety office or consult with your physician.

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